

SIMULTANEOUS OBSERVATIONS OF SOLAR FLARES WITH CGRO/OSSE AND YOHKOH/WBS

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JOINT OSSE/YOHKOH OBSERVATIONS

CGRO and Yohkoh are the only instruments currently in orbit capable of studying high-energy emissions from solar flares in detail

- Combined observations extend solar viewing time, reducing time lost due to satellite night and SAA transits
- WBS extends flare observations to <1 MeV when OSSE is not pointed at the Sun
- WBS is less sensitive than OSSE and so is less prone to saturation effects during intense flares
- OSSE's better sensitivity and energy resolution helps to resolve WBS spectral features

INSTRUMENT CAPABILITIES



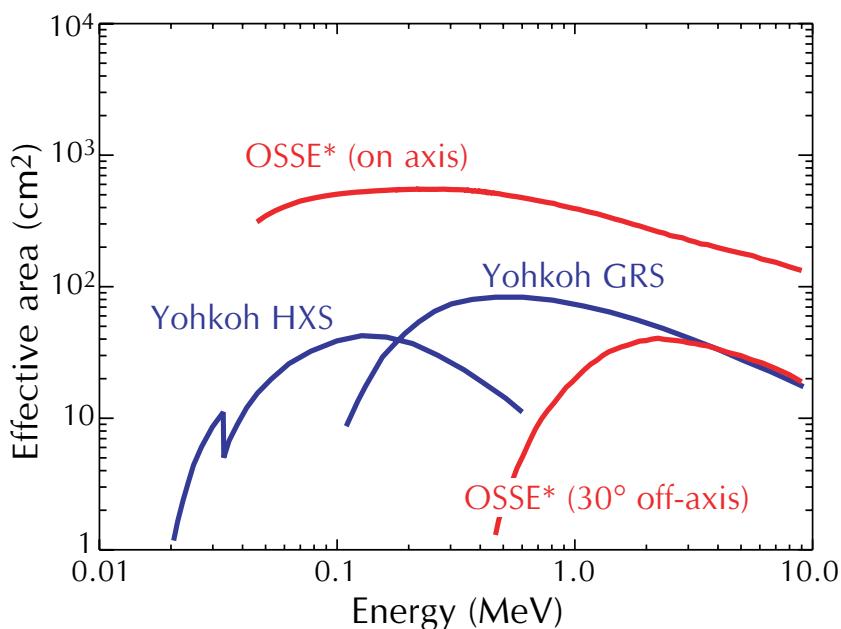
CGRO/OSSE

- 50 keV - >150 MeV
- separates gamma rays and neutrons
- ~7% energy resolution @ 1 MeV



Yohkoh/WBS

- 2 keV - 100 MeV
- sensitive to both gamma rays and neutrons
- ~12% energy resolution @ 1 MeV



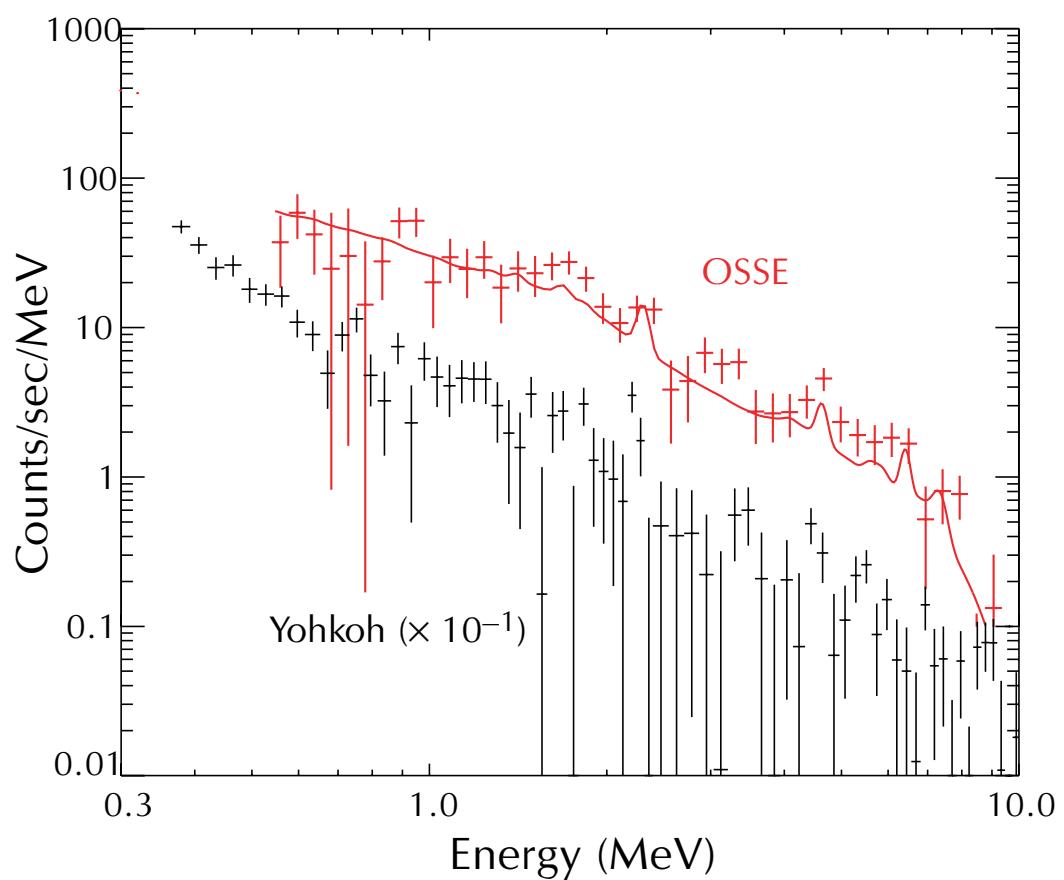
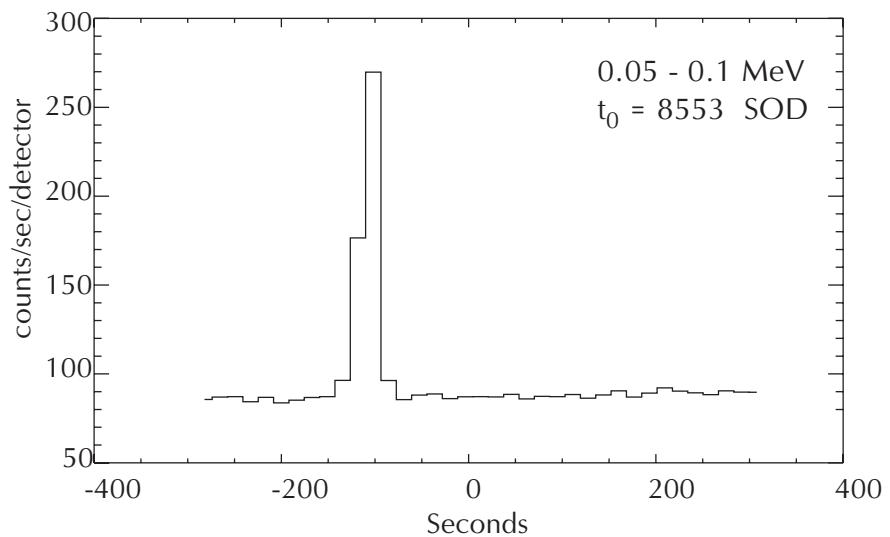
*OSSE area is for one detector

COMMON FLARES

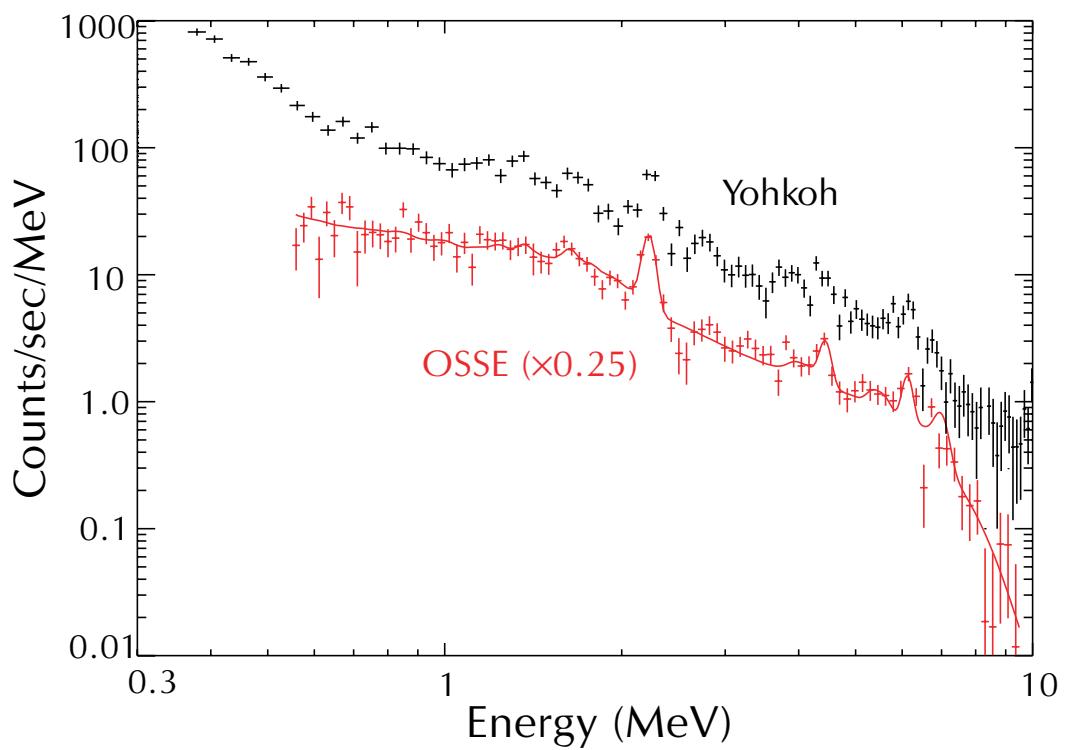
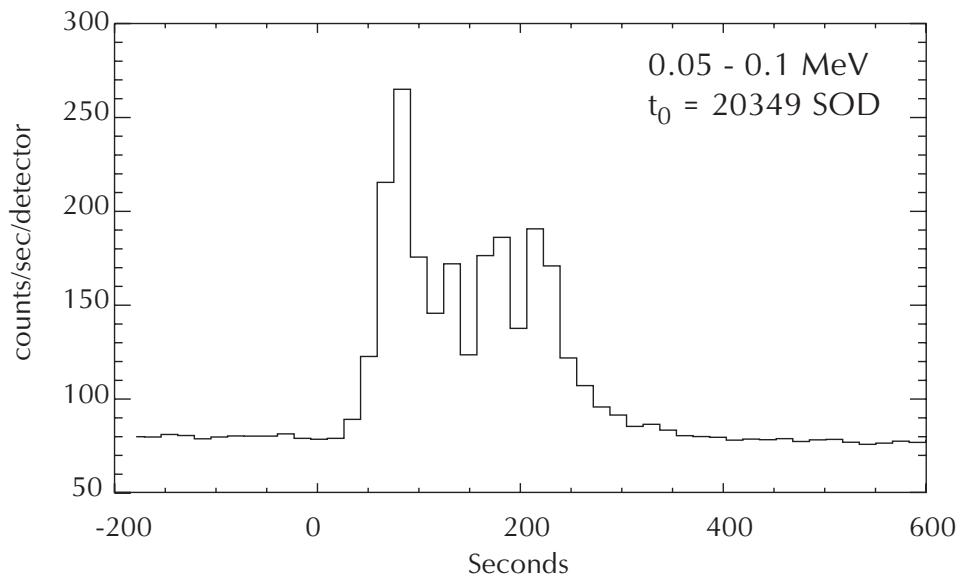
Date	X-ray peak	GOES class	Location	OSSE off-axis angle
OCT 24 1991	02:40	X2.1	S14E59	30°
OCT 27 1991	05:48	X6.1	S13E15	31°
NOV 15 1991	22:39	X1.5	S13W19	32°
NOV 6 1997*	11:55	X9.4	S18W63	80°
NOV 22 1998	06:42	X3.7	S27W82	42°

*No OSSE observations during peak due to SAA transit. Neutrons were detected.

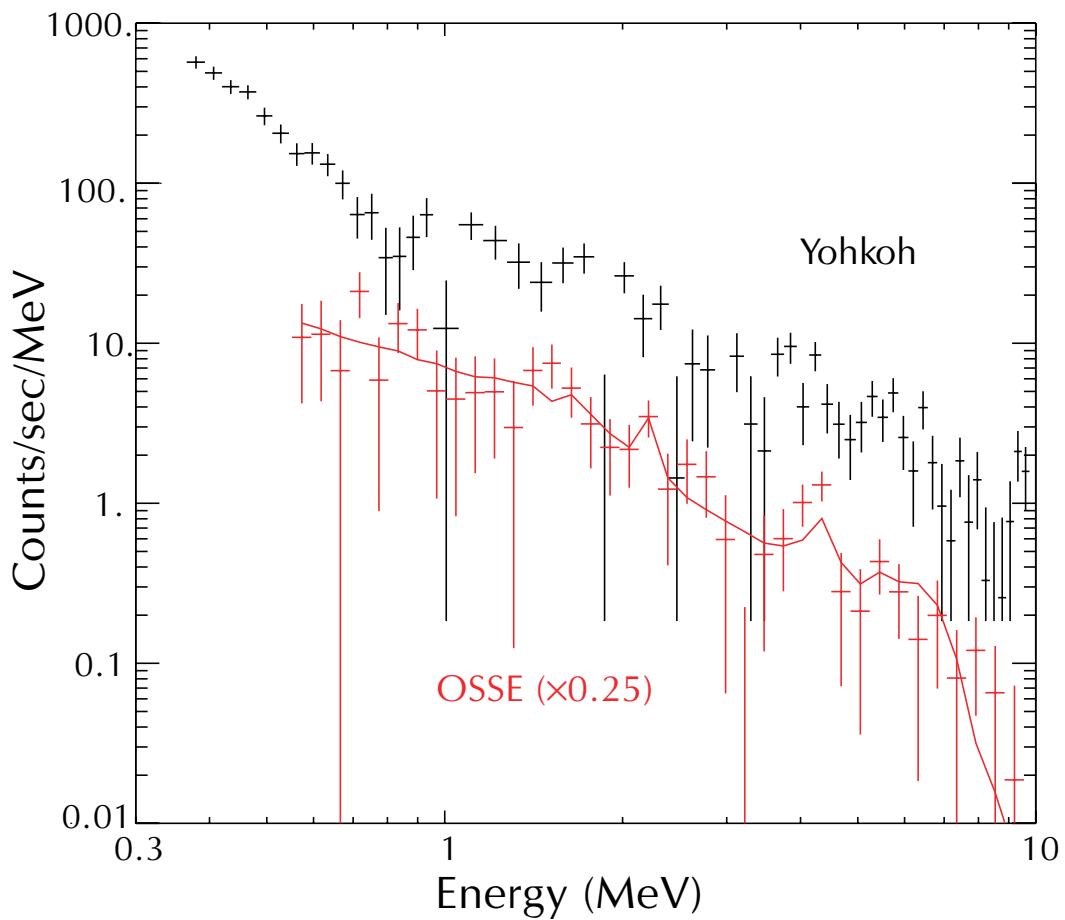
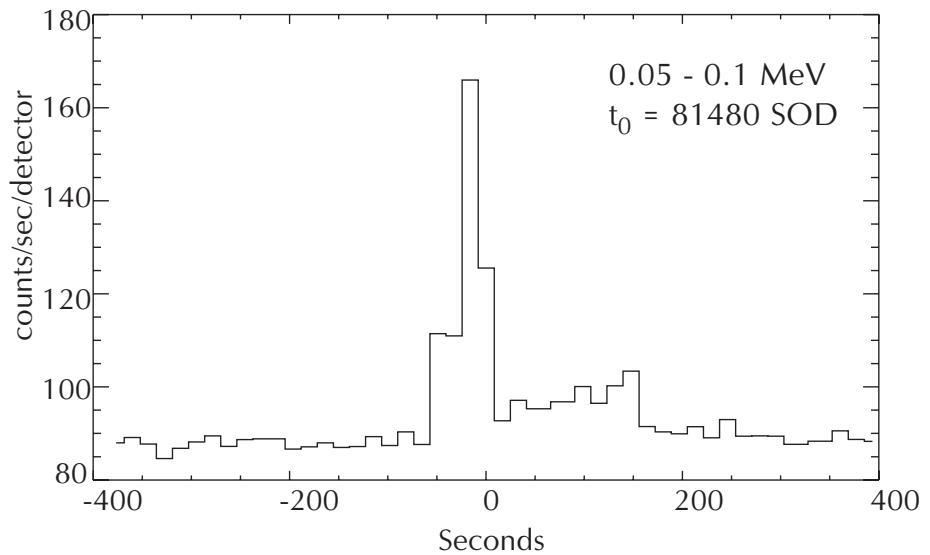
1991 October 24



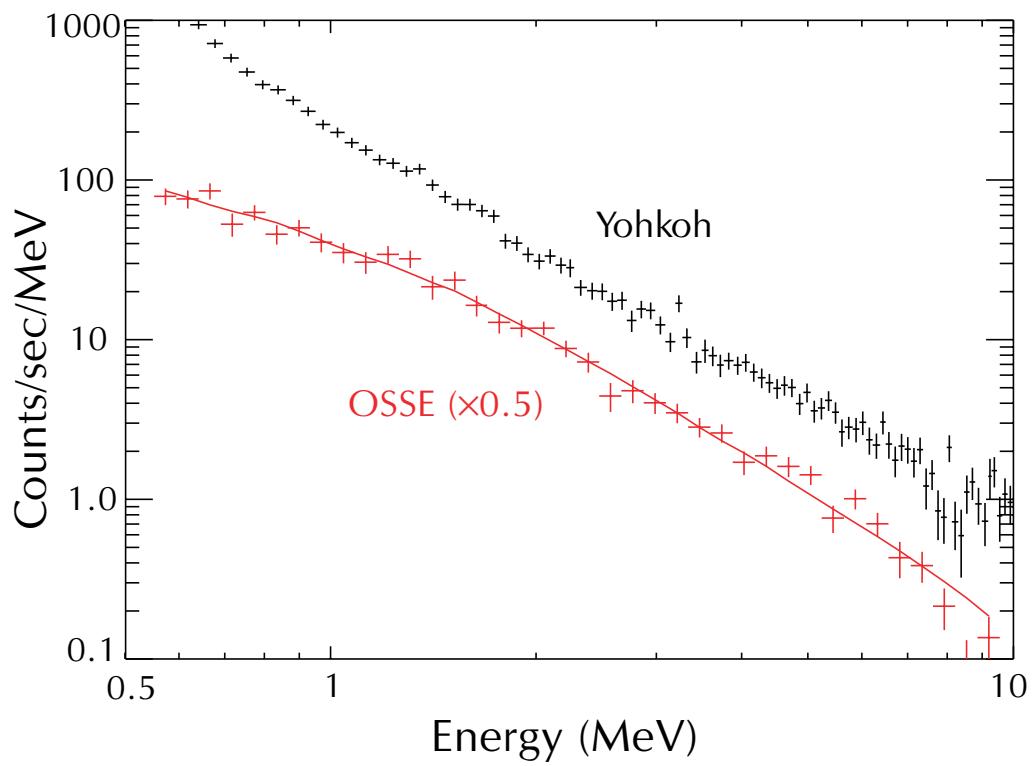
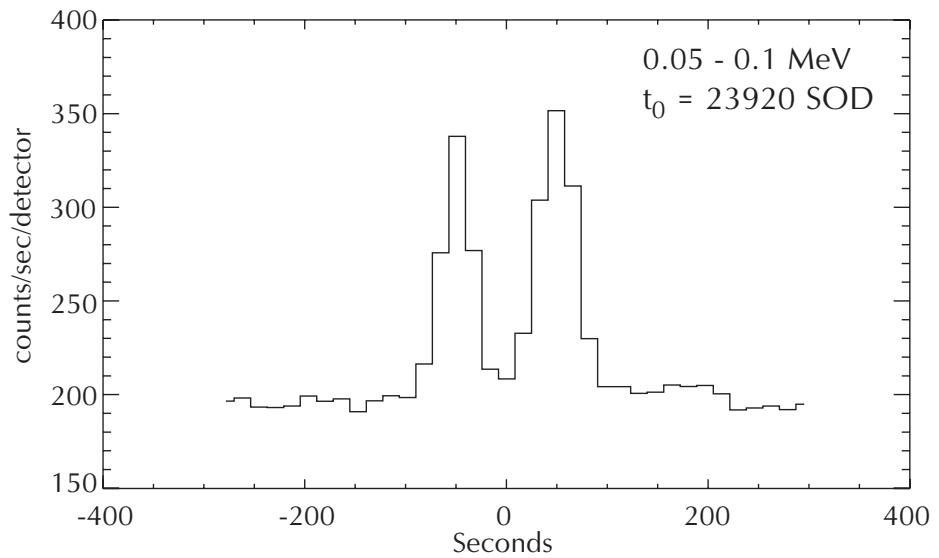
1991 October 27



1991 November 15



1997 November 22



COMPARISON

Flare	Power law index		>1 MeV bremss. (photons cm ⁻²)	
	Yohkoh	OSSE	Yohkoh	OSSE
1991 Oct 24	2.7±0.3	2.4±0.3	28.7±8.3	19.0±5.7
1991 Oct 27	3.6±0.2	2.9±0.4	20.8±3.0	40.5±11
1991 Nov 15	3.7±0.3	3.0±0.7	4.4±1.1	16.7±7.5
1998 Nov 22	2.4±0.1	2.5±0.1	624±41	314±13

Flare	2.223 MeV fluence (photons cm ⁻²)		>1 MeV fluence (photons cm ⁻²)	
	Yohkoh	OSSE	Yohkoh	OSSE
1991 Oct 24	11.7±4.0	2.5±0.5	90.1	56
1991 Oct 27	33.3±3.5	19.8±1.0	249	183
1991 Nov 15	3.1±2.6	1.0±0.7	39.4	41.5
1998 Nov 22	–	–	624	314

1997 November 6

